## THROUGH THE AQUEDUCT.

A TOUR OF THE NEW CONDUIT. SIGHTS AND SOUNDS IN THE GREATEST

TUNNEL IN THE WORLD. THE MASSIVE GATE-HOUSE AT CROTON LAKE-

OUAKER BRIDGE RESERVOIR-MISCONSTRUC-

WASTED-225,000 HOLES CUT-GROUTING.

A walk through the new Aqueduct was proposed. The first requisite was a passport, and to obtain it a visit was paid to the chief engineer, Alphonse Fteley, whose office is in the Stewart Building. Mr. Fteley is as courteous as he is learned in his profession. The reporter was a little doubtful about the pronunciation of his name, and took care to prime himself before sending in a card. The elevator-boy whispered in confidence that "everybody called it different"; some "Eftilly," some "Eftly," some "Fitealy," some "Footly," a few "Te-ley." Mr. Frost, his private secretary, was appealed to. "Telly," he aid, which seemed simple enough, and the reporter mastered it thoroughly. Mr. Fteley, who was exceedingly busy, regretted that he could not accompany the reporter on his tour. No one had yet walked through the tunnel, not even an engineer, not even that fine old soldier and gentleman, General Duane, who had been In the habit of making two or three subterranean expeditions a week. Four letters were written, similar to this: CHIEF ENGINEER'S OFFICE-AQUEDUCT COM-MISSIONERS.

A. Fteley, chief engineer, George S. Rice, deputy chief engineer.

New-York, Jan. 20, 1890.

Mr. Charles S. Gowen, division engineer, Sing Sing, N. Y. Dear Sir: This is to introduce Mr. \_\_\_\_\_, of T Tribune, who wishes to make a trip through the aquede tunnel and to visit the gate houses, etc. Please extend to him all possible facilities to visit the work under your

charge. I am, respectfully,
A. FTELEY, Chief Engineer. The other three letters were written to George B. Burbank, division engineer, Brewster's Station; Alfred Craven, division engineer, Yonkers, and Edward Wegman, jr., division engineer, No. 324 St. Nicholas-ave.

"I shall also," said Mr. Fteley, "write personally to each of these gentlemen, telling them of your intended visit, so that they may be prepared to receive you."

This, however, proved unnecessary, as, on the next day, Mr. Rice, the deputy chief engineer, cheerfully consented to act as escort during the The reporter suddenly found himself relieved of every embarrassment, Mr. Rice taking hold at once and arranging all the details of the trip. The first meeting was at the Grand Central Station on Thursday morning, January 23. sun was just rising when the train reached Sing Sing. It was bitter cold. Two stout gray horses, a rockaway and "Jim," the driver, were in waiting, and they whirled the tourists over the frozen roads in the direction of Croton Lake, seven miles distant. On the way Mr. Gowen, who has charge of the first fourteen miles of the aqueduct, was picked up. He is an engineer of acknowledged ability and few words. The city is largely indebted to him for the exposure of countless frauds in the masonry of the tunnel. A short stop was made at his office, where the vacant places in the rockaway were filled with tunnel toggery, then the drive was continued through frost-nipped valleys and barren hills, along the edge of the proposed Quaker Bridge Reservoir, which is to hold 30,000,000,000 gallons bf Croton water when filled, and on to Croton Dam, where the great gate-house stands in a niche blasted out of the solid rock of the hills. Here the tunnel was to be entered for the long journey.

GETTING INTO RUBBERS. In & small frame house below the dam, used

for an office, a complete metamorphosis was effected in the outward appearance of Mr. Rice, Mr. Gowen and the reporter. Tweed trousers and diagonal coats were exchanged for corduroys, which seemed to have had an intimate acquaintance with the country; light shoes were taken off, thick woollen socks were pulled over lisle thread and the feet and legs as high up as the hips incased in rubber boots, with innumerable corners and crevices and angles, and room enough for the foot to roam about promiscuously, exceriating heel; instep, and ankle-bone regardless of the future. Mr. Rice clung to his sealskin cap, plunged head and ears into rubber sou'westers. Rubber coats completed the outfit. Mr. Rice looked partly respectable, Mr. Gowen looked like a battered tar on a weather-beaten whaler, the reporter looked like a tatterdemalion scarecrow in a watermelon patch. The trio were a sight to trighten darkness out of the tunnel. But, inasmuch as they were impervious to moisture and indifferent to silicate of magnesia, they were content. Mr. Gowen padded his coat with candles, shouldered a scoop-like reflector that swung in a fork at the end of a pole, and took up the march.

THE GREAT SATE HOUSE.

The gate-house through which the water is admitted to the aqueduct is an imposing structure. almost overpowering in its immensity. It sets in a great hole blasted in the solid rock 100 feet below the old dam. Far above the level of the water is the upper inlet, a short tunnel about ten feet in diameter. Below this is the middle inlet, of the same size. The uninstructed wonder twhirs those two big holes gaping there in the side of the hill can have to do with the water supply. They would never guess that this massive gate-house was built in view of the construction of Quaker Bridge Dam, and that the two inlets will be of no sort of service till such time as that dam may be constructed. And there is still another inlet, forty-four feet beneath the upper one, through which not a drop of water can flow till the Quaker Bridge Reservoir is completed. The water above the present dam reaches the gate-house through what is called the by-pass inlet, a tunnel near the bottom of Croton Lake This by-pass was constructed under many difficulties. In order to prevent the water in the take from interfering with the work a wall of rock was left standing on the bank, between the portal and the lake, till the tunnel was finished and the gates were closed. Then a single blast of 800 pounds of dynamite blew the wall into fragments, and the channel was complete. Mr. Rice, Mr. Gowen and the reporter stood on the wall near the portal and watched a diver at work removing pieces of stone from the bottom. The lake was covered with ice as he worked.

QUAKER BRIDGE DAM. Quaker Bridge Dam, the site of which is five miles south of Croton Dam, is to be 264 feet high and 1,500 feet long, and the water behind it will form a lake sixteen miles long, and so deep that Croton Dam, from which our present supply comes, will be submerged to a depth of thirtyfour feet. Scores of farms and farmhouses in the valley will have to be abandoned when the water begins to rise. The view from the upper inlet of the gate-house is picturesque. The cows are moodily browsing the frosted grass in pasture lots separated by stone fences which go zigzagging up and down and across the peaceful dale. The houses and barns are asleep, and their inmates, too, for all the life that may be seen about them. The edges of the spillways of the dam are huge chunks of ice, between which the water is hurrying down the slope to the Hudson, robbing the city of millions of gallons daily. The scene, as far as eye can reach, is worth gazing on for an hour; ere long it will be a barren waste of waters.

WHERE THE WATERS ARE TAMED. Men are busy in the gate-house fixing the gear for raising and lowering the gates. One man, by turning a small wheel, is enabled to lift tons. The floor is of perforated iron plates, through which, in abysmal depths below, may be seen the vast stone chambers in which the waters are to gurgle and boil and rage as the engineer arrests their mad sweep; for it would not do to open wide the gates and let the mighty stream tear through the house at its own pace. It must be taken voice

early in hand and quieted, controlled and tamed before it is permitted to pass the portal of the aqueduct. When the by-pass is opened there is a terrific onslaught from the lake, but the massive walls resist it, till the water in the first chamber is on a level with the crest of the dam. Then the great gates near the bottom of the chamber are cautiously opened. The water, under heavy pressure, sweeps through into the second chamber, roaring terribly, but here it is again checked, only to be allowed to pass on when quieter into a third chamber, and a fourth. In the last chamber it passes through enormous strainers of brass, which keep back all the trash that may have drifted in.

The gate-house is a study in itself. It is a masterly piece of engineering. Like Solomon's Temple, it was built without the sound of chisel or hammer on the stone used in the construction of its walls. Every piece, designed in the office of Mr. Fteley, was cut by quarrymen in Maine to fit a certain place, and the masons had only to lay the courses according to specifications and bind them together with cement.

Through a hole in the floor the tourists plunged down, down, down a winding-stair, till they were dizzy with winding; then down a ladder; then down a rope, sailor-fashion, hand-under-hand, till they stood beneath the great brass strainers. Before them, less than six feet away, was the portal of the aqueduct, big, hollow, black; shaped like a horseshoe set up on its heels, wide enough for ten men to walk abreast and tall enough for a locomotive with funnel erect. Candles were lighted, hats were pulled down, and bootlegs pulled up. The tourists stepped inside, gave a last look at the gatehouse, and wheeling round started for Central Park, thirty-three miles away. THROUGH THE DIAPHRAGM.

Fifty feet from the portal the aqueduct is planked up temporarily from the bottom of the invert to the crown of the arch, and entrance to the tunnel is gained by a narrow little door through which the wind hums mournfully, putting out the lights as they attempt to pass. Once inside, the door is closed, the wind is dammed and the candles are relighted. The hole is as dark as Erebus. The pupil dilates slowly, but by and by takes in the empty blackness. There is no perspective. Everything is a blank fifty feet away. The side walls, the floor and the arch near at hand are easily discernible, but they are black and reflect not. Directly ahead the eye looks into a nebulous cone, which constantly advances, ever beckoning the traveller on, like an "ignis fatuus." The tunnel starts eastward, but curves rapidly to the south, turning an angle of 40 degrees in a distance of 200 feet, then it starts off on a tangent nine and a half miles long. On the uninitiated this curve produces a curious hallucination. It seems never to stop, but curves on and on till it becomes a spiral. The eye loses all sense of direction. If the flicker of a candle is seen far beyond the apex of the cone it is the most natural thing in the world to step to the opposite side of the tunnel in order to get a better view of it. This is done unconsciously again and again, silly as it may seem.

The party walks on with rapid, steady-no, not steady-stride. The bottom of the tunnel is like the bottom of a washbowl, a depressed arch inverted, therefore briefly termed the invert. The centre is eighteen inches lower than the edges, consequently the water that leaks in forms a little river, which has a sloping bank on either side. Walking in this river soon becomes a labor. Mr. Rice and Mr. Gowen walk on the banks, which are in places so narrow that there is room for only one foot. They are used to it, and seem to get on easily with a sort of hopstep, one foot always being lower than the other, owing to the slope. The reporter tries it, and sprawls about helplessly, soraping his shoulder against the wall one moment and the next tobogganing down to the middle of the river, waving his arms wildly for a balance. After many scrapes and slips he learns the trick walking on the bank, and progress then is not so difficult. The heels of his borrowed boots, long accustomed to slip and slope, have been worn to fit the invert, and as soon as he discovers this his troubles lighten. But he finds a frequent change of bank necessary to his happiness. By long hopstepping on the right bank his left leg becomes elongated, while his right becomes foreshortened to an alarming degree. He begins to feel like a man with white swelling, or hip disease. To change this he fords the stream and obtains a change of leg, the right now suffering elongation. and the left foreshortening.

HOW THE TUNNEL WEEPS. The water, which at the portal was only two inches deep, gradually deepens, encroaching always on the narrow banks. The tunnel weeps continually. It is excessively lachrymose. Fortunately, owing to its peculiar construction, it drinks all its tears, which join its little river, swelling it all the time. The eyes with which it weeps are rightly called weepers, being small rectangular openings in the side walls, through which all the water collected and collecting on the outside of the masonry pours into the inside. By means of them many thousand gallons are added to the Croton supply daily. Often did the re-porter kneel beside these weepers and fill to the brim with pure spring water, fresh from the heart of the hills.

of the hills.

Progress is measured by white porcelain plates having black figures burned into them and screwed to the last wall every 500 feet. The portal at the gatehouse being at zero, each glate represents a multiple of 500. All will be under water when the great gate swings open, but they can be easily found when needed. The plates are called stations. When an engineer orders that a leak at Station 250 plus 75 be stopped, the contractor knows that the spot is exactly 25,075 feet, a little less than five miles, from the gatehouse.

from the gatehouse.

As the tourists walk they talk. Their voices are low, yet the tunnel hums as a beehive hums when its colony is agitated. Occasionally, in the course of its modulations, a voice strikes a certain pitch

low, yet the tunner tunns of its colony is agitated. Occasionally, in the course of its modulations, a voice strikes a certain pitch which causes an intense vibration.

"The tunnel has a key of its own," says Mr. Rice, and forthwith he proceeds to search for it in all the compass of his voice. The "do-me-soldo" is given in every key, major and minor, but the echo spoils the chord, and little is gained. The wooden partition near the portal is only half a mile in the rear, and acting as a diaphragm, or sounding-board, it checks the reverberations. A gentle "Hello!" is answered with a startling distinctness. Words, sentences and phrases are repeated with an accuracy and clearness that far cellipse the phonograph. A whisper travels half a mile in the black air and steals back to tingle the ear with its sibilation. The reporter is provided with a complete orchestra—a tuning-fork and a harmonica—and he employs it with astounding effect. No German band could ever hope to flood the earth with music as that harmonica in B does. If there be spirits in the bowels of the earth, they must dance to the tunes that confuse and split the erstwhile solemn air. The tunnel quivers and the big hills groan with the agonies of "Johnny, Get Your Gun," "Old Dan Tucker," "Johnny Ryestraw," "Billy in the Low Ground," "Pop Goes the Weasel," "Run, Nigger, Run," "Juba," "Devil's Hornpie"—all murdered indiscriminately in their sleep. But they make music, oh, such music! till the bricks in the wall cry peace. The most beautiful effect of all comes when "Old Black Joe" is sung in Mr. Rice's sweet tenor. In the refrain, the "I'm coming" is repeated far in the distance, softly, plaintively, like an echo from the grave, and in the mind's eye the old darkey is seen trudging wearily along, his heaf bowed low over his staff.

A TUNNEL IN F MAJOR.

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At Station No. 50 plus 98 a dull ray of light glances along the east wall It steals down through shaft No. 1, a round well five feet in diameter and 350 feet deep. It is covered over at the top with thick plank, but there are cracks through which glimpses of the silver sky are obtained. The bucket and windlass are gone, but in their place an iron ladder hugs the wall. The tourists pass on, swapping jokes and singing. Mr. Gowen has a fine baritone voice, the reporter a melancholy bass, and with Mr. Rice as precentor, the little choir makes itself heard—probably in the reservoir in Central Park, probably in the antipodes. A person possessed of any sort of voice finds his vanity immensely stimulated in this hole of superb acousties. Even Patti would get an exaggerated notion of her own lofty vocalism were she induced to sing here under the earth, and \$500 a note would not fetch her afferward in the Chicago Auditorium, or anywhere else.

Imagine the tunnel a grand organ pipe into which a flood of harmony is poured and hermetically sealed. Imagine yourself gifted with the power to break the seal and then to lie down in a oulet spot and drink in for ages the escaping melodies. In the oppressive silence deep down under the hills the sounds seem waiting for a voice to stir them to action. A shout alarms pass on, swapping jokes and singing. Mr. Gowen

them painfully, they go dancing and ricochetting noisily down the pipe, melting slow, y away till lost in the accumulating miles of brick and mortar, or till wafted up an open shaft to vanish in the air of the hill-tops.

At station No. 150, nearly three miles from the portal, beyond the range of the echo, repeated experiments discover the tunnel to be tuned to the key of F. There can be no mistaking it. No matter where the voice may wander, when is stumbles on that particular key the tunnel makes instantaneous response; a response gracious, genstumbles on that particular key the tunnel makes instantaneous response; a response gracious, generous, soulful. It warms the blood with its vibrations and fills one with an eestasy of delight. The chord, sung moderately loud, one tone after another in sharp staccato—"do, mi, sol, do"— roils away rapidly through the ringing hall. For a few seconds each tone retains its distinct individuality. The first uttered seems to be chased by the others. Soon it is overtaken by "mi," then by "sol," then by the octave "do." The four then sweep on together in delicious harmony. Ear never listened to a more enchanting sound. For sixteen seconds the concord lingers, then a dissolution takes place, the tones parting company even as they joined, each resuming its individuality and gradually passing away. The tourists drink of this intoxicating draught till their souls are bursting. are bursting.

A tunnel in F major is a masterpiece of which
New-York can never feel too proud.

FALSE WORK.

The aqueduct along here is the same in width as in height-thirteen and a half feet. From the portal, all the way down, the side walls and the arch have a mottled appearance, caused by patches of new masonry placed in the old. So extensive were the frauds in the masonry that the completion of the aqueduct has been retarded over a year. The entire tunnel has been in a large measure reconstructed at the expense of the con tractors, the extra cost being some \$2,000,000. The work was an outrageous swindle from beginning to end, as can be proved, as will be proved, when the claims are presented for final adjustment. The engineers had over 225,000 holes out through the walls of the tunnel, and each hole exhibited a steal. Thousands of cubic yards of air were paid for at the rate of \$5 a yard, air that was supposed to be masonry. There were two methods of repairing the faulty work, one by tearing down the walls and rebuilding them, the other by cutting holes through the lining, which was sound, and effilling the spaces behind them with rubble masonry. The latter was decided upon, and the 225,000 holes were out. When the spaces were filled with loose rock, cement in liquid form was forced into the crevices and interstices by means of a powerful air pump working at a pressure of forty to ninety pounds. In tractors, the extra cost being some \$2,000,000. terstices by means of a powerful air pump working at a pressure of forty to ninety pounds. In a few weeks this cement will dry out and "set," locking the rock together into a firm, immovable mass. This method is called grouting. While repairs were being made on Mr. Gowen's division one of the inspectors contributed the following lines to enlarge the hilarity of the occasion. There is reason in his madness—more reason than rhythm. The characters mentioned are all well known on the work:

KEEP UP THE GROUTING ALL THE WHILE. Air: From The Compressor.

One day there came around an engineer named Gowen.

And he said: "All the bucking must come out."

But he came another day, and he had another way.

And he said: "I guess we'll fill them up with grout."

Make them put in neat cement if it costs them every cent. Forty thousand barrels to the mile."

Then old Arnold got a funnel and he took it down the tunnel And they've kept up the grouting all the while. The company bought a lot of tools, bought another hundred

And a string of carts that reached almost a mile, With twenty barrels to the load, they came up the Sing

To keep up the grouting all the while. If you want to do it neatly, scientific and completely.

If you want to grout it so it'll never " spile," and get a thousand dippers, give them to a th

Sing road.

And let them keep up the grouting all the while How the Guineas flocked around when they heard the whistle sound,

And they marched upon the case in single file : And as the cage went slowly down, there arose a mournful "We must-a keep-a up-a the grout-a all-a the while."

When O'Grady's light went out he fell down in the grout, And he floated all around quite awhile; But a Guinca five feet tall poured him in behind the wall. And they kept up the grouting all the while.

Then McDonald came along, he was glad that he was gone.

For he said he thought O'Grady acted vile.

He said he didn't care a cent; O'Grady was cheaper than

To keep up the grouting all the while, One day Peter J. O'Flina he condemned every .

Guinea, For he said they couldn't grout in proper style; And the walking boss said "--- ft," but they got snoth

And they kept up the grouting all the while. One night Gilchrist came along, singing some

And he hung about the tunnel for awhile: And then backward he did creep, caught the inspector fast

But they kept up the grouting all the while. It was Kellogg made the hole, for he carried the sounding

And he handled 't in true artistic style : Then along came Sitngerland, said he guessed he'd take a

To keep up the grouting all the while. Then the big and bold John Tarn said he didn't give a darn

And on D. D.'s face there came a wicked smile:

And he said out loud to Bruff, "\_\_\_\_\_\_ it, they can't make cement enough To keep up the grouting all the while." How the engineer had to hustle! Even "Steve" got or

his muscle, Orcutt couldn't get his hair cut for awhile; Mocre at "One" said: "Now yew bet I can't sr While they keep up this grouting all the while."

Then the Senators came down to take a look around,

And they winked with one another with a smile; And they slid into the bar—not for a good eigar— But to keep up the grouting all the while. And poor Virgie Worthington, time-keeper at Shaft One. "This grouting will all my pleasure spile : Some fellow'll take my girl away, while I at the shaf

If they keep up the grouting all the while." So the work goes right along, whether it's just or whether

Day by day Scitzinger's records go on file; And in 1901 the tunnel may be done, If they keep up the grouting all the while

Now this song is all in fun, and at last it's nearly done. And the author's going out to get his "ile And he'd ask you all to go, if it was pay-day, "don't yer And keep up the grouting all the while.

BIG FIGURES TO CONTEMPLATE. The estimated cost of the Aqueduct was less than \$15,000,000. Before it is completed nearly \$23,000,000 will have been expended.

\$23,000,000 will have been expended.

Work on the Aqueduct was begun in January, 1884, and will probably be finished next June—six years and a half.

The total length of the Aqueduct from the Croton Lake gate-house to the Central Park gate-house is thirty-three and an eighth miles.

The flowing capacity of the Aqueduct from Croton Lake to the proposed reservoir at Jerome Park is 318,000,000 gallons every twenty-four hours; from Jerome Park to Central Park, 250,000 gallons every twenty-four hours, leaving 68,000,000 gallons to be distributed through the Annexed District.

The amout of brickwork laid in the Aqueduct is estimated at 312,258 cubic vards The amout of brickwork laid in the Aqueduct is estimated at 312,258 cubic yards, or about 163,000,000 bricks, which would build thirty-three structures the size of The Tribune Building. The total area of the inside surface of the Aqueduct from Croton Lake to the One-hundred-and-thirty-fifth-st. gate-house is equal to 7,092,823 square feet, or 162 4-5 acres; or about one-lifth the area of Central Park.

The amount of material excavated in the construction of the Aqueduct, added to the masonry placed, exceeds 3,250,000 cubic yards, which is equivalent to 83 per cent of the volume of the great pyramid of Cheops. This material would be sufficient to build a wall ten feet thick and fifty-five feet high around Manhattan Island, thirty miles in length on the water-front.

The amount of dynamite used in blasting on the Aqueduct, exclusive of the amount used in staking the shafts, was over 5,800,000 pounds; nearly 3,000 tons.

The water that flows through the Aqueduct every twenty-four hours is equivalent to a stream fifty feet wide and ten feet deep, flowing 59 feet 1 1-5 inches a minute, or about one foot a second.

NEED OF THE NEW AQUEDUCT.

were sprung every day, and a large force of masons was kept constantly at work on repairs. A break meant a water famine in New-York. How near such a horror the city was its inhabitants may never know. Only the most diligent watching averted it. The Bronx River pipe line came to the old aqueduct's relief, but its 20,000,000 gallons disappeared as rapidly as rain in the great desert, and the people clamored for more. The total supply of 115,000,000 gallons a day failed to rinse the faucets on the second floor oftener than twice in the twenty-four hours. The public fountains thirsted in vain, and at last, losing all hope, cracked their parched basins into geometrical shapes, like mud on a river's bank in time of drouth. The streets could not be sprinkled because there was no water to spare, and the eyes of all the people were blinded with dust.

A new water supply was talked of for several years, and numerous plans were suggested. Finally a new Croton aqueduct was decided on. The spillway at Croton Lake was wasting daily millions of gallons which the old aqueduct could not bring to the city. This water must be saved.

UP SHAFT NO. 4 IN A BUCKET

UP SHAFT NO. 4 IN A BUCKET

But to return to the tour. Between shafts No. 2 and No. 3 the tunnel is 540 feet under ground. Shaft No. 2 is 349 feet deep, and No. 4 350 feet. The tunnel changes not a whit as the miles are scored. It is decided to make an exit at No. 4, and to resume the journey on the morrow At the bottom of the shaft there is a platform above the water, with a dozen barrels of cement around the edges and a pile of bricks on one corner. In the centre sits an iron bucket as big corner. In the centre sits an iron bucket as big as a hogshead, and a wire rope an inch thick is fastened in the looped handle. This rope leads the eye up the shaft a distance of 2461-2 feet, where it seems to go through a hole about the size of a silver dollar. The lower end of the shaft, about thirty feet of it, is spread out flat like a whiskey flask, but all the rest, 216 feet, is round, the whole resembling a bottle with a very long neck, such a neck as the Kentuckians like when they "liquor up." There is an iron ladder fastened to the lining from top to bottom, but the rungs are greasy with moisture, and an ascension by means of them is not inviting. A climb of 2461-2 feet up a perpendicular ladder, even when it is dry, is not a diversion that appeals to the tunnel tourist. The bucket has many advantages.

vantages.

Mr. Rice gets in first, then the reporter clambers in, followed by Mr. Gowen. The bucket is waist deep. An inspector, who has been waiting on the platform, climbs upon the rim and stays there all the way up, holding to the rope with one hand, while with the other against the region hand, while with the other against the terming.

with one hand, while with the other against the for he keeps the bucket from swaying or turning.

"We want to go slow," said Mr. Gowen, as he takes in his candles.

The inspector jerks the signal rope four times, the rope becomes taut in an instant, and the bucket begins to rise. After passing the flask and getting well into the neck of the bottle, the draught becomes so strong that coat tails fly up and hats have to be held on with both hands. As the silver dollar at the top draws near, it gradually expands, till it looks as large as a cart-wheel. The bucket stops, with its rim on a level with the copestone, and the inspector steps off, followed by Mr. Gowen. Without waiting for instructions, the reporter proceeds to do likewise. Pulling himself up by the rope, he manages to get both feet on the rim. Then, reaching out his right foot, he plants it on the copestone, placing himself in the attitude of the Colossus at Rhodes. The bucket sways to the opposite side of the shaft and turns slightly, opening a gap as black as the bottomless pit. When it sways back to its proper place, the reporter throws his weight on his right foot, gives a quick push with his left, and is safe on the copestone. Mr. Gowen heaves a sigh of relief.

"It's all right, now-that you're safe," he says, "but that isn't orthodox."

He then explains that the orthodox way of leaving a bucket at the mouth of a shaft is to begin by taking firm hold of a knotted rope fastened to a stanchion for the purpose, and never to let go of it till safely landed: for, without such precautions, a misstep, a slipping of the foot, a tilting of the bucket, would mean certain death.

The open air is frosty, but before it strikes to be recovery the tourists buttoning their rub-

death.

The open air is frosty, but before it strikes to the marrow the tourists, buttoning their rubbers tightly, start off on a run for the office, which is not more than half a mile away. There they find "Jim." the faithful hostler-janitor, who has brought their clothes over from the lake, and into these they jump in short order. Ten minutes later they find "Jim" in the dining-room, where a royal dinner is waiting to be attacked. And it is attacked. No quarter is given. For a time it seems as if the spoons and forks are in danger. "How many eggs have I eaten, Jim?" Mr. Rice

inquires.

"Nine, sir," Jim replies, with the promptness of one who has been keeping count. And yet the eggs are only a small part of the dinner. A tunnel tour for an appetite! There's nothing like

It is now 5 o'clock. A drive to Sing Sing and a ride to New-York on the express end the first day. In town the reporter finds himself uncomfortable on the sidewalks. His legs fall to understand him properly. They want an incline or a stepoil. The left seems to be about six inches shorter than the right, so in order to humor this feeling he walks around with his right foot in the gutter and his left on the curbstone. This harmonizes everything.

## FESTIVITIES AT LAKEWOOD.

LAND IMPROVEMENTS - SUNDAY TRAIN - LONG LISTS OF GUESTS.

Lakewood, Feb. 1 (Special).-The parlors of the Laurel House were bright with lights and gay with laughter last evening. The occasion of the enjoyment was a "heart party" given by Mrs. Francis P. Froeman. of New-York, in recognition of her husband's hirthday. Thirty-six people, all Laurel House guests, were present, all of whom were intensely interested in the game. They were placed at small tables and played uninterruptedly for an hour and a half, when time was called and hearts counted. Those who were fortunate enough to win the dainty prizes were Miss Louise Jones, Mrs. Bayard Scrith, Miss Mary Young, Mr. Cotterell and Mr. Bayard Smith, all New-Yorkers. While the guests were admiring the prizes a table laden with good things to eat was brought in. In the centre was a birthday cake, appropriately decorated and encompassed by thirty-six glowing candles. The cake was the gift of Messrs. Plumer & Porter, the managers of the Laurel. Great interest was man-ifested when it was whispered that a prize was concealed in one of the slices of the cake. Mr. Com-stock was the lucky gentleman, drawing a pretty silver pencil from his piece. Mrs. Sheppard F. Knapp is one of the recent New

York arrivals at the Old Homesicad. Mr. and Mrs. A. B. Boardman, of Staten Island, were at the Laurel House this week Secretary Tracy

is expected to accompany Mr. Boardman on his next Mr. and Mrs. Maitland Armstrong, of New-York,

were in Lakewood on Tuesday.

John Holmes, of Holmes & Coutts, New-York, was a
guest of Charles F. Naething this week.

The Sunday train to be put on the New-Jersey

Southern early in February will be an innovation, and will be welcomed by a good many people here.

The latest New-York arrivals at the Laurel House

this week include the following: Dr. M. Allen Starr, S. Ormiston, A. L. Bell, L. Longhurst, W. B. White, Mrs. H. W. Knott, R. Chambers, W. A. Day. William T. Eldridge, C. D. Chapman, John M. Chapman, Charles C. Worthington, Neil McDonald, W. A. Eoynton, W. H. Payne, John B. Colton, Park E. Bell, a measure in making the pure and elevated tone of Mr. and Mrs. T. E. Sloan, Charles Le Boutillier, A. K. Mr. and Mrs. T. E. Stoath, Charles Le Fehriner, Douglass Bourne, Mr. and Mrs. Rudolph E. Schriner, Douglass Greer, Miss King, James D. Leary, W. E. Curtis, Miss Estelle Sloan, Charles Converse Tyler, Mrs. F. R. Hawes, Mrs. Arthur Ridley, Mr. and Mrs. G. W. Kenyon, Mr. and Mrs. Myron Plummer, Mrs. Thomas H. Hall, L. Lindley, Daniel McKeever, Miss Libbie

min Brewster, Mrs. Henry P. Havens, Paul Hoffman Mrs. Robert Nicol, Mrs. Skae and Miss Skae . Among the Brooklyn arrivals at the Laurel House are Mr. and Mrs. Walter Christle, J. S. Meserole, Mr. and Mrs. A. C. Betford, H. B. Hubbard, Clarence Crelghton, Mrs. McDonald, H. W. Maxwell, Mr. and Mrs. W. A. Sweeney, S. Jenkins, Mr. and Mrs. W. Dodsworth, Edward A. Low, Msx E. Sand, Dr. and Mrs. J. H. Race, Mrs. W. A. White, Miss White, W. A. M. White, Mr. and Mrs. S. S. Pachard, Miss Pachard, Mrs. Charles Robinson Smith, Miss Adelo Kenyon, Mrs. J. B. Woodward, Mr. and Mrs. W. A. Caesar, Mr. and Mrs. Allan McNaughton, Henry J. Van Dyke, Mrs. L. A. Street, S. F. Street, Miss C. B. Condit, J. G. Baechen, J. Herbert Watson, E. S. Harding, Henry Dalley, Miss Evelyn Dalley and A. F. Britton. are Mr. and Mrs. Walter Christie, J. S. Meserole, Mr.

McKeever, A. H. McKeever, D. O. McKeever, Miss Catherine H. Hunt, Gordon Fellows, the Rev. Benja-

every twenty-four hours is equivalent to a stream fifty feet wide and ten feet deep, flowing 59 feet 1 1-5 inches a minute, or about one foot a second.

NEED OF THE NEW AQUEDUCT.

These figures and comparisons are given in order that this great public work, one of the greatest public works ever undertaken since the world began, may be understood and appreciated by people who have had neither time nor inclination to devote their lives to the study of engineering. Few such have even the remotest conception of its magnitude. The taxpayers and residents of New-York simply declared that they must have water at any price. The old aqueduct, with a capacity of 75,000,000 gallons a day, was so severely taxed when called on to deliver 95,000,000 gallons under pressure, that it was momentarily in danger of going to pieces. Leaks

low-tail coats. It has not a woman member, and probably never will have. A timid woman who at-tempted to reach the Pastime club-house on a dark

night would probably tumble over half a dozen tomb-



PRESIDENT J. E. SULLIVAN.

The Pastime Club is known in athletic circles as the "Athletic Nursery," from the fact that each year it turns out many new men, who in time migrate to the larger and more wealthy clubs. "Lon" Myers, the famous athlete, gave the name "Nursery" to the Pastimes several years ago, and the appelation was so fitting that it has stuck to it ever since. The club is in good financial standing, and has over \$1,000 ready cash in bank, with no outstanding debts. It is a fact that every entertainment given by the club during the last five years netted some money, and during the year 1889 the club cleared over \$800 in athletic entertainments alone. Much of the athletic success of the club is due to the fact that there is no social element in the club, and no tobacco or intexicationg liquors are allowed on the grounds. As many of the officers are athletes, or have been, they work for the development of athletes only. ONCE A CHURCH, NOW A CLUB-HOUSE.

The present house and grounds of the club have a history and are one of the landmarks of New-York. The grounds are situated on what is known as the Schermerhorn property, and years ago, somewhere in 1800, the club-house was used as a church. Outside the twelve-lap track on the slope of the hill, under the many large trees, is the old burial-ground, with tombstones bearing dates showing that the bodies were buried some time before 1800. The church in after years was used as a home by a sea-captain, and has finally been furned into a gymnasium and club-house



The Pastime Club was organized May 14, 1878 with the following officers and members: John Burkhardt, jr.; secretary, John L. Conner; treasurer, George Winters; captain, William Watson; Charles J. Krank, William Lang, Daniel Fitzgerald, George Kaiser, jr., John Burkhardt, sr., Robert Wi son, Andrew Lotz, William Adlum, A. Mason, H. Gaedner. The old Central Athletic Club then had possession of the piece of property in Sixty-sixth-st. overlooking the East River.

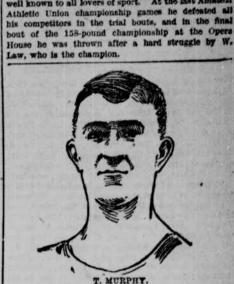


James E. Sullivan is the president of the club, and is also the hard-working secretary of the Amateur Athletic Union. Few athletes have had a more varied experience than Sullivan. He made his first appear ance as an athlete at the games of St. John the Evangelist Church, Jones's Wood, September 4, 1878. when, with thirty seconds start, he won the two-mile walk. May 5, 1879, he finished second to Harry Fredericks in a five-mile walk. June 7, with two seconds start, he won a one-mile walk; Harry Fredericks (scratch) second. But also like the others, if he has renounced active athletic work, it has been to distinguish himself in a more laudable field. His persistent, persevering efforts to eliminate from the amateur ranks a class of men who have flourished and thrived upon dishonest methods have resulted in



Associated with Messrs. MacMillan, Ruhl and Janssen, Sullivan has been one of the projectors and one of the most energetic workers to whom the present success of the Amateur Athletic Union is at tributed. His experience, like Janssen's and Mac Millan's, has been of a practical character, and this it is which enables him to cater so intelligently the interests of athletes generally.

The present board of officers consists of President,
James E. Sullivan; vice-president, P. D. Bell; treasurer, A. J. Murberg; secretary, H. Dimses; financial secretary, L. Friedham; captain, J. H. Hughes; Heutenan<sup>+</sup>, H. Luerson. Games Committee—J. Burkhardt, Jr., A. H. Lewis, W. Pollman, J. Moran and J. D. Sands. The constitution of the club declares that any young man over eighteen years old is



eligible to membership. The admission fee is \$3, and

the dnes 86 pc year.

J. H. Hughes, the captain of the club, is a well known to all lovers of sport. At the last An

T. Murphy is one of the eleverest bantam weight boxers in the club. He made his first appearance at the last championship meeting of the Amatous Athletic Union tournament held at the Metropolitas Opera House and won second prize. Besides clever boxer he is also a good cross-country run He won first prize in the New-York Athletic Club's 105-pound competition three weeks ago, and also won the championship of the State of New-York at Parep Hall on Wednesday. Little Murphy is also a



A. J. Mürberg, the treasurer of the club, is a short distance runner of some reputation, and has won over twenty-five prizes. Henry Drinse, the secretary, has been a prominent walker for a number of years He won third prize in the twenty-five-mile champion ship a year ago, and last winter finished second to samuel Cramer in the four-mile championship race held at the Madison Square Garden. W. F. Pallman member of the games committee, is another member of the club's walking team, and is the proud posses of nearly fifty prizes won in walking races dur

WELL-KNOWN BOXERS AND WRESTLERS Among the boxers and wrestlers, members of the club who compete in most of the boxing competitions are D. O'Brien, the 105-pound champion of America.
M. J. Dinan, H. Dunn, J. Fisher, Owen Harney. D. E. Manning, H. Stevenson, T. Cantwell, F. Schneer ing, M. Shields, William Bush, D. Hagen, P. Higgins T. Murphy, P. Doherty, J. Mechan, M. Nagle J. Burns and T. Hanley.



Among the athletes that the Pastime Club contributed to the championship prestige of wealthies clubs are Frank Lambrecht, Harry Fredericks, mile champion for four years; Arthur Waldron, champ 100-yards runner, and one of the few men who de feated Brooks, the college champion; H. M. Stone D. Lehane, J. Bullos, Frank Lane, J. C. Keane, A. A. D. Lehane, J. Bullos, Frank Lane, J. C. Keane, A. A. Jordan and Jack Thornton. E. C. Carter's first appearance in America was made under the Pastime colors, also that of the three Ellingsworth boys, Joseph Quinn, J. J. O'Brien, Frank Lane, J. Flyan, C. Smith, W. Hass and J. D. Harris. All these men were members of the Pastime Athletic Club, where they held championship honors. The Pastimes were the first club to give the all-round athletic championship of America. The club gave the annual boxing and wrestling champions of New-York State in 1884, which was also a decided success.

THE CROSS-COUNTRY TEAM. The cross-country team of the club is in good con dition, and will make an excellent showing in the coming championship meetings. The team is made coming championship meetings. The team is made up as follows: J. Adelsdorf, captain; W. Beck, J. Lowenstein, J. Hefferman, C. Hoey, J. McGarry, W. Rubern, H. Marcus, A. Marsh, J. Byrne, E. Steffins and F. A. McNally.

The club men won three banners for general excellence at games as follows: Sacks banner, in 1886; New Jersey Athletic Club banner in 1889. During the year the athletes of the club won over over 300 prizes in athlete competitions.

Among the well-known athletes now members are:

athletic competitions.

Among the well-known athletes now members are:
W. R. Burckhardt, Sammel Cramer, V. Poilman, H. W.
Wolf, M. Berrian, H. Dimses, J. Keating, A. J. Murherg, George Burrell, James Robinson, H. Morrell, E.
Steffins, David Labey, James Meehan, R. Honston, D.
Sands, J. Moran, M. O'Sullivan, D. Ross, Archie Brown,
the well-known hurdler, who finished second at the
championship meeting; A. Arnold, M. Donovan, J. C.
Lally, H. C. Johansen, T. A. Collet, G. Casey, A. II.
Lewis, J. Adelsdorfer, H. Marcrus, J. F. Byrne, T.
Lanahan, T. A. McNally, H. Beckh, H. A. Lucrson,
W. E. Hughes, E. S. De Lam, W. A. Siebold, J. C.
Steinruk, C. Marsh, J. F. Gerdes, A. Werner, J. C.
Forbes, J. Horahan, J. S. Donough, T. Murphy,
George Fisher and Mr. Mundle.

NEW-JERSEY COAST NOTES.

NEW BULKHEADS - REAL ESTATE IMPROVE

Long Branch, Feb. 1 (Special).-Richard V. Breece the well-known contractor of Long Branch, is erecting a number of new bulkheads between Elberon and Sea Bright. He designed them himself, and guarantees that they will prevent the further encroachment of the sea. Mr. Breece's men have completed new bulkheads for the Ocean-ave. cottages of Robert Barbour, J. Howard Wright, Henry Harbeck, Robert B. Winthrop, Horace White, George W. Childs, John Sloane and Mrs. Mary A. Lyddy. The bulkheads of George M. Pullman, at Elebron, and Washington E. Conner, of Sea Bright, are nearly finished.

Julian E. Ralph, the proprietor of the Coleman House at Asbury Park, has purchased the Taylor prop-orty on Third-ave., adjoining the Coleman House An-

Edward Batchelor, of Philadelphia, the fo Avon-by-the-Sca, is having a substantial bulkhead Avon-by the Sca, is having a substantial resort.

The plans for the new addition to the Hotel Brunswick, at Fourth-ave, and Kingsley-st., Asbury Park,

have been changed so that the hotel will have do its former capacity. Contracts have been made for the erection of number of costly new cottages at Como.

A dozen new cottages are being erected at Sawe

A dozen new cottages are being crected at Sewaren, on the shore of the Kill Von Kull, near Perth Amboy.

Long Branch sadly needs a new charter, so thes the town can have its streets.

Dr. Pettingill is remodefling and enlarging his cottages on Heck-st., Asbury Park.

The Monmouth Water Company, which was organized for the purpose of furnishing a supply of pure water to the resorts between Point Pleasant City and Asbury Park, will put a big gang of men at work soon. Ex-Governor Robert S. Green is the president of the company.

Thomas Patton, of New-York, the agent of the Rhinelander estate, is building two more new cottages on his Pleasure Bay property.

Dr. Quinby, of Jersey City, is builkheading the Shrewsbury River front of his property, at Little Silver.